

**REMARKS**

In the office action, claims 21-28 have been rejected under 35 U.S.C. §112 and 35 U.S.C. §103.

In response, claim 21 has been amended. In addition new claims 29-34 have been added. Accordingly, claims 21-34 are pending in the application.

Applicants extend gratitude to Examiner Lewis for taking the time to discuss the office action with their representative, Lauren T. Emr, on July 8, 2003.

**Support for Amendment to Claims and New Claims**

Support for the amendment to claim 19 can be found on page 5, lines 1-31.

Support for new claims 29-34 can be found beginning on page 7 and continuing through page 9.

**Rejections Under §112**

Claims 21-28 have been rejected under §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to the office action, Applicant has failed to particularly point out the identity of the modifications to the plant that has been genetically modified. In the interest of moving the application towards allowance, Applicant has amended claim 21 to recite that the starch is from a plant having elimination or inhibition of genes that encode granule based

starch synthase. On page 5, lines 1-10 of the application, elimination or inhibition of the genes that encode granule based starch synthase is discussed. The elimination or inhibition can occur by genetic manipulation or recessive mutation.

In the office action, claim 21 has also been rejected for failing to end in a period. Claim 21 has been amended to end with the proper punctuation.

Applicant respectfully requests that the above rejections based on §112 be reconsidered and withdrawn.

### **Rejection Under §103**

Claims 21-28 have been rejected under §103 as being unpatentable over Seppala et al. in view of Hovenkamp-Hermelink et al. and Batelaan et al. The Examiner recognizes that Seppala does not teach (1) starches from a plant that has been genetically modified; (2) a process wherein the starch is hydrophobized via amidation; and (3) attaching the hydrophobic group in the presence of a surfactant. The Examiner contends that these deficiencies are taught by Hovenkamp et al. and Bathelaan et al. Applicant respectfully disagrees.

Seppala et al. disclose a process that utilizes natural starches, only. Nowhere in Seppala et al. is there any disclosure or suggestion to utilize root or tuber starches from modified plants. Seppala is equally silent concerning elimination or inhibition of genes that encode granule based starch synthase.

Hovenkamp-Hermelink et al. discloses amylose-free starch from mutant potatoes. However, nowhere in Hovenkamp is there any disclosure or suggestion to prepare hydrophobic starch derivatives from amylose-free starch obtained from modified root or tuber plants. There is no suggestion that such a mutant would possess the unexpected properties that Applicants have discovered that lead to particularly advantageous hydrophobic starches.

Batelaan et al. disclose methods for amidation of a material having at least one carboxyl-containing polysaccharide (see page 3, line 31 to page 4, line 1). The carboxyl-containing polysaccharide include carboxyl methyl starch. However, nowhere is there any disclosure or suggestion to utilize root or tuber starches from modified plants.

In order establish a *prima facie* case of obviousness, one of the criteria to be met is that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the teachings of the references

Nowhere in Seppala et al. or Batelaan et al. is there any disclosure or suggestion to replace the natural starch of Seppala et al., or the polysaccharide of Batelaan et al., with root or tuber starches having at least 95 wt.% of amylopectin.

The examiner states on page 6 of the office action the following:

*A prima facie* case of obviousness may be made when chemical compounds [starches] have very close structural similarities and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties."

However, no evidence has been put forth to support the idea that natural starches or polysaccharides have similar properties as root or tuber starches having at least 95 wt.% of amylopectin, or that the two would be interchangeable.

In fact, Table 1 demonstrates that root or tuber starches having at least 95 wt.% of amylopectin have different properties from that of waxy maize starch also having at least 95 wt. % amylopectin.

The experiment on page 15, lines 1-5 and Table 1 shows that both amylopectin potato starch and waxy maize starch were substituted with dodecenylsuccinic ester with a degree of substitution of 0.005. If amylopectin potato starch and waxy maize starch have similar properties, then one would expect the viscosities to also be similar.

Yet surprisingly, the amylopectin potato starch substituted with dodecenylsuccinic ester with a degree of substitution of 0.005 has a viscosity which is 4.8 to 5.75 times greater than that of waxy maize starch with the same substitution.

Therefore, taking the data as a whole, it can be concluded that root or tuber starches having at least 95 wt.% of amylopectin have different properties than that of polysaccharides, such as natural starches. In addition, root or tuber starches having at least 95 wt.% of amylopectin have different properties than that of natural potato starch. See Table 1 of the application.

Since root or tuber starches having at least 95 wt.% of amylopectin and polysaccharides, such as natural starches, do not have similar properties, it would not have been obvious to replace the natural starches of Seppala et al. or to replace the polysaccharide of Batelaan et al. with root or tuber starches having at least 95 wt.% of amylopectin.

Thus, applicants have presented evidence that a *prima facie* case of obviousness does not exist. However, if the examiner is still not persuaded by applicants arguments that it would not have been obvious to replace the natural starches of Seppala et al. or to replace the polysaccharide of Batelaan et al. with root or tuber starches having at least 95 wt.% of amylopectin, applicants have added new claims 29-34.

Applicants have added new independent claim 29 to recite that the hydrophobic attachment is by etherification or esterification and wherein the reaction utilizes a hydrophobic reagent comprising a reactive group which is a halide, halohydrin, epoxide, glycidyl or quaternary ammonium and an alkyl group having 7-24 carbon atoms.

Nowhere in Seppala et al. is there any disclosure of an etherification or esterification reaction utilizing a hydrophobic reagent comprising a reactive group which is a halide, halohydrin, epoxide, glycidyl or quaternary ammonium and an alkyl group having 7-24 carbon atoms. In fact, Seppala et al. only discloses etherification and esterification utilizing carboxylic acids and anhydrides (see column 9, lines 31-60).

Therefore, the primary reference (i.e., Seppala et al.) has been dispensed of in new claims 29-34. Thus, the secondary references are now moot. Accordingly, all the claim limitations have not been met and a *prima facie* case of obviousness has not been established.

In view of the foregoing amendments and remarks, applicants respectfully submit that the application is now in condition for allowance and is earnestly requested. If the examiner believes that a discussion with applicants' representative would be of assistance, he is invited to contact the undersigned.

Respectfully submitted,



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